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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,057	07/02/2003	Michael Lee Zierolf	BFGRP0304US	6656

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EXAMINER	
SCHWARTZ, CHRISTOPHER P	
ART UNIT	**PAPER NUMBER**
3683	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,057	ZIEROLF, MICHAEL LEE	
	Examiner	Art Unit	
	Christopher P. Schwartz	3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-8 and 10-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-8 and 10-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response filed 8/3/05 has been received and considered.

2. Claims 1-3,5-8,10-18 are currently pending. Claims 4,9,19,20 have been canceled.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3,5-8,10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rudd '676 in view of Murphy .

Rudd '676 discloses a torque controller 34 which comprises an input, *for receiving* a command torque, as broadly claimed, an input *for receiving* a signal indicative of a measured amount of brake torque applied to the wheel and an output for providing a brake pressure output command to a brake actuator. Please see the discussion in columns 4-7 and note equation 6.

Although Rudd does not specifically mention using a "computed inverse brake gain" to adjust the brake pressure, applicants, in their specification at page 5 lines 17+ state appear to say that either brake gain or inverse brake gain may be used to produce the brake output pressure command signal to control the pressure applied to the brake assembly.

From equation (13) of Rudd (see col. Around line 27) it appears the inverse of torque to pressure (i.e. inverse brake gain—as defined by applicants) is in fact used at "k".

Notwithstanding applicants lack of criticality in their specification it is known in the art to use "inverse brake gain" in these types of computations. Although not applied see the similar system to Park col. 3 lines 43-44.

Rudd lacks a specific discussion of adjusting the brake pressure output command Pc to provide improved brake response during normal braking.

The reference to Murphy discloses a torque feedback controller, which has inputs for receiving command and measured brake torques, and that allows torque compensation operation until the wheel speed reaches zero that avoids discontinuities in braking regardless of time or torque level. Please refer to col. 6 of Murphy. This reference is similar to the prior art discussed on page 1 of applicants specification. Murphy also discloses an alternative embodiment in figure 3 and discussed on col. 8

One having ordinary skill in the art at the time of the invention would have found it obvious to have modified the reference to Rudd to incorporate the teachings of Murphy to offer smoother brake system and to avoid the discontinuities in braking (such as grabby brakes) discussed by Murphy.

The limitations of claims 2-20 are either suggested by the combined teachings of Rudd and Murphy or are notoriously well known in the art. For instance, although not applied, note the look up tables suggested by Littlejohn or Amberg et al. '113.

Response to Arguments

5. Applicant's arguments with respect to claims 1-3,5-8,10-18 have been considered but they are not persuasive. Applicants arguments center on the issue of whether an "inverse brake gain" is used in the computation of brake actuator output pressure in Rudd, as modified. From the several equations listed, it appears that it is. Notwithstanding this argument, and applicants lack of criticality in the specification, the reference to Park, which shows a very similar system to that of Rudd, clearly states this at col. 3 lines 43-44 (i.e. "the reciprocal of the torque vs. pressure ratio").

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Park.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Schwartz whose telephone number is 571-272-7123. The examiner can normally be reached on M-F 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chuck Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER

Cps
10/14/05